What is claimed is:

1. A dye-sensitized solar cell comprising a transparent conductive layer, a porous semiconductor layer on which a dye sensitizer is adsorbed, a carrier transport layer and an counter electrode which are formed in this order on a transparent substrate,

wherein an absorbance peak of the porous semiconductor layer is located on a shorter wavelength side of the absorbance spectrum than that of the porous semiconductor layer observed immediately after the dye sensitizer is adsorbed.

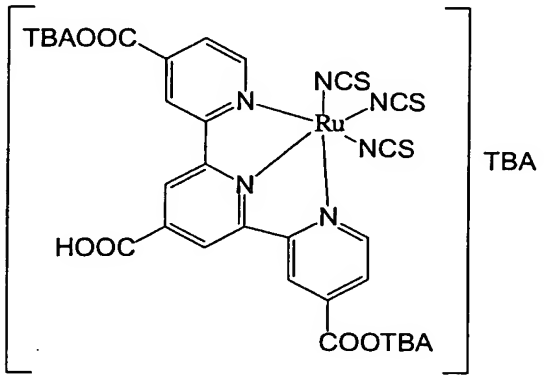
2. The dye-sensitized solar cell of claim 1, wherein the porous semiconductor layer is made of titanium oxide.

3. The dye-sensitized solar cell of claim 1, wherein the dye sensitizer is made of an organic dye or a metal complex dye.

4. The dye-sensitized solar cell of claim 1, wherein the dye sensitizer is made of cis-bis(isothiocyanato)bis(2,2'-bipyridyl-4,4'-dicarboxylato) - ruthenium(II) and the absorbance peak of the porous semiconductor layer is located within the range of 500 nm ± 30 nm.

5. The dye-sensitized solar cell of claim 1, wherein the dye sensitizer is made of cis-bis(isothiocyanato)bis(2,2'-bipyridyl-4,4'-dicarboxylato)-ruthenium(II)bis-tetrabutylammonium and the absorbance peak of the porous semiconductor layer is located within the range of 490 nm ± 35 nm.

6. The dye-sensitized solar cell of claim 1, wherein the dye sensitizer is made of tris(isothiocyanato)-ruthenium(II)-2,2':6',2"-terpyridine-4,4',4"-tricarboxylic acid, tris-tetrabutylammonium salt having the formula (1):



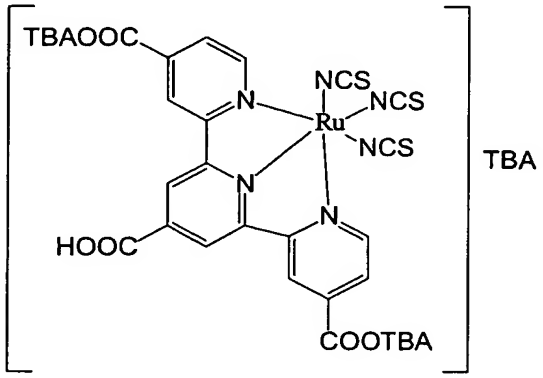
(1)

(wherein TBA is tetrabutylammonium residual group) and the absorbance peak of the porous semiconductor layer is located within the range of 580 nm ± 35 nm.

7 The dye-sensitized solar cell of claim 2, wherein the dye sensitizer is made of cis-bis(isothiocyanato)bis(2,2'-bipyridyl-4,4'-dicarboxylato) - ruthenium(II) and the absorbance peak of the porous semiconductor layer is located within the range of 500 nm ± 30 nm.

8. The dye-sensitized solar cell of claim 2, wherein the dye sensitizer is made of cis-bis(isothiocyanato)bis(2,2'-bipyridyl-4,4'-dicarboxylato)-ruthenium(II)bis-tetrabutylammonium and the absorbance peak of the porous semiconductor layer is located within the range of 490 nm ± 35 nm.

9. The dye-sensitized solar cell of claim 2, wherein the dye sensitizer is made of tris(isothiocyanato)-ruthenium(II)-2,2':6',2"-terpyridine-4,4',4"-tricarboxylic acid, tris-tetrabutylammonium salt having the formula (1):



(1)

(wherein TBA is tetrabutylammonium residual group) and the absorbance peak of the porous semiconductor layer is located within the range of 580 nm ± 35 nm.

10. A manufacturing method of a dye-sensitized solar cell comprising a transparent conductive layer, a porous semiconductor layer on which a dye sensitizer is adsorbed, a carrier transport layer and an counter electrode which are formed in this order on a transparent substrate, comprising:

the step of shifting an absorbance peak of the porous semiconductor layer to a shorter wavelength side of the absorbance spectrum than that of the porous semiconductor layer observed immediately after the dye sensitizer is adsorbed.

11. The manufacturing method of claim 10, wherein the step of shifting the absorbance peak of the porous semiconductor layer is carried out after the dye sensitizer is adsorbed in the porous semiconductor layer.

12. The manufacturing method of claim 10, wherein the step of shifting the absorbance peak of the porous semiconductor layer is carried out by a thermal treatment.

13. The manufacturing method of claim 12, wherein the thermal treatment is carried out at 100 to 180°C.

14. The manufacturing method of claim 10, wherein the step of shifting the absorbance peak of the porous semiconductor layer is carried out by a chemical treatment.

15. The manufacturing method of claim 14, wherein the chemical treatment is carried out by using a solution containing at least one heteroatom-containing cyclic compound.

16. The manufacturing method of claim 15, wherein the chemical treatment is carried out by immersing in the solution for 1 minute to 30 hours the porous semiconductor layer after the dye sensitizer is adsorbed.

17. The manufacturing method of claim 15, wherein the heteroatom-containing cyclic compound is a nitrogen-containing cyclic compound.

18. The manufacturing method of claim 17, wherein the heteroatom-containing cyclic compound has two or more nitrogen atoms.

19. The manufacturing method of claim 15, wherein the heteroatom-containing cyclic compound is a nitrogen-containing cyclic compound including a substituted or unsubstituted 5-membered ring.

20. The manufacturing method of claim 10, wherein the absorbance peak of the porous semiconductor layer is shifted to the shorter wavelength side of the absorbance spectrum by 10 to 60 nm than that of the porous semiconductor layer observed immediately after the dye sensitizer is adsorbed.